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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,839	02/19/2002	Ajit Lalvani	7096-102XX / 10103632	3551

7590 02/27/2004

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EXAMINER	
MINNIFIELD, NITA M	

ART UNIT	PAPER NUMBER
1645	

DATE MAILED: 02/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/830,839	LALVANI ET AL.	
	Examiner	Art Unit	
	N. M. Minnifield	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-31,33,34,36-46,48,49,51-55,57,58,60-62,64,65,75,76,78,79,81 and 82* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 27-31,33,34,36-46,48,49,51-55,57,58,60-62,64,65,75,76,78,79,81 and 82.

DETAILED ACTION

Response to Amendment

1. Applicants' amendment filed November 19, 2003 is acknowledged and has been entered. Claims 1-26, 32, 35, 47, 50, 56, 59, 63, 66-74, 77 and 80 have been canceled. Claims 33, 34, 44, 48, 49, 57, 58, 60, 64, 65, 78 and 79 have been amended. Claims 27-31, 33, 34, 36-46, 48, 49, 51-55, 57, 58, 60-62, 64, 65, 75, 76, 78, 79, 81 and 82 are now pending in the present application. All rejections have been withdrawn in view of Applicants' amendment and/or comments with the exception of those discussed below.

2. It is noted that Examiner had indicated that claims 27-31, 36-43, 53-55, 75, 76, 81 and 82 appear to be in condition for allowance. However, upon further review all of the pending claims are rejected as set forth in the new grounds of rejection set forth below. Further, it is noted that this Office Action is NON-FINAL.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before

November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 27-31, 33, 34, 36-46, 48, 49, 51-55, 57, 58, 60-62, 64, 65, 75, 76, 78, 79, 81 and 82 are rejected under 35 U.S.C. 102(e) as being anticipated by Andersen et al (5955077).

The claims are directed to methods of determining infection in an human patient by, or exposure of a human patient to mycobacterium which expresses ESAT-6 comprising the method of contacting a population of T cells from the patient with the peptide represented by SEQ ID NO: 1 (ES1) and optionally other peptides from SEQ ID NO: 2-11, and to kits for carrying out the method. The peptides can also be a peptide wherein the peptide is substituted by an analogue, the peptide analogue has one or more deletions or conservative substitutions.

Andersen et al discloses the polypeptide ESAT-6 as well as the amino acid sequence (SEQ ID NO: 2). The peptides (SEQ ID NO: 1-11) claimed by Applicants are set forth in disclosed SEQ ID NO: 2. The prior art discloses methods for diagnosing tuberculosis (abstract; col. 11). Andersen et al discloses that analogues and subsequences of the polypeptides can be used so long as it has the same immunological characteristics as the polypeptide (col. 2, l. 50-55). The analogue and subsequence of the polypeptide are of a "...similar amino acid sequence as shown in SEQ ID NO: 2, allowing for minor variations which do not have adverse effect on the ligand binding properties and/or biological function and/or immunogenicity, or which may give interesting and useful novel binding properties or biological functions and immunogenicities etc." (col. 2, l. 60-67).

"Furthermore, in the present context the term "immunologically equivalent" means that the analogue or subsequence of the polypeptide is functionally equivalent to the polypeptide with respect to the ability of evoking a protective immune response against tuberculosis and/or eliciting a diagnostically significant immune response (e.g. a DTH reaction)." (col. 3, l. 4-10; see also col. 3, l. 41-47). Andersen et al discloses that in immunodiagnostics it is often possible and practical to prepare antigens from segments of a known immunogenic protein or polypeptide, that certain epitopic regions may be used to produce responses similar to those produced by the entire antigenic polypeptide, and that these potential antigenic or immunogenic regions can be identified by known methods (col. 11, l. 9-25). Andersen et al discloses a peptide, which comprises an epitope for a T-helper cell (col. 11, l. 27-28). Andersen et al discloses methods of diagnosing tuberculosis caused by *M. tuberculosis*, *M. bovis* or *M. africanum* in an animal, including a human being, comprising intradermally injecting, in the animal, a pharmaceutical composition containing a polypeptide as defined or an analogue and/or subsequence thereof which is immunologically equivalent to the peptide, a positive skin response at the location of injection being indicative of the animal having tuberculosis, and a negative skin response at the location of injection being indicative of the animal not having tuberculosis (col. 14, l. 6-17). Andersen et al discloses that when "diagnosis of previous or ongoing infection with virulent mycobacteria is the aim, a blood sample comprising mononuclear cells (i.e. T-lymphocytes) from a patient could be contacted with a sample of one or more polypeptides of the invention. This contacting can be performed in vitro and a positive reaction could e.g. be proliferation of the T-cells or release cytokines such as γ-interferon into the extracellular phase (e.g. into a culture supernatant).

Finally, it is also conceivable to contact a serum sample from a subject to a contact with a polypeptide of the invention, the demonstration of a binding between antibodies in the serum sample and the polypeptide being indicative of previous or ongoing infection." (col. 14, l. 35-47; see also col. 14, l. 48-62; figures; Example 5, cols. 29-30). Andersen et al discloses the use of ESAT6 as a diagnostic agent on a skin test (see Example 6, col. 31, l. 5-17). Andersen et al discloses that the mycobacterium can be *M. tuberculosis*, *M. bovis* or *M. africanum* (col. 2, l. 27-31). Andersen et al discloses diagnostic kits for the diagnosis of on-going or previous TB infections comprising peptides and means for detecting the interaction with the relevant substance reacting with peptide (col. 12, l. 30-43).

The prior art of Andersen et al discloses the claimed methods and kits.

5. Claims 28-31, 33, 34, 36-38, 41-43, 53-55, 57, 58, 60-62, 64 and 65 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 53-55, 57, 58, 60-62, 64 and 65 are vague and indefinite in the recitation of "polynucleotides expressing in human cells... "; It is not clear what Applicants intend. Do Applicants intend polynucleotide sequences as in the polynucleotide sequences that encode the peptides of SEQ ID NO: 1, for example or something else entirely? Claims 28-31, 33, 34, 36-38, 41-43 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: what are the specific steps involved in determining whether T cells of the patient recognize the peptide of SEQ ID NO: 1 for example. Is this an in vitro method, skin test, or something else?

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. M. Minnifield whose telephone number is 571-272-0860. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette R.F. Smith can be reached on 571-272-0864. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

N. M. Minnifield
Primary Examiner
Art Unit 1645

NMM
February 19, 2004